

What is claimed is:

1. A magnetic thin film inductor comprising:
a plurality of elongated conducting regions positioned parallel with each other and at a selected spaced distance apart from each other; and
magnetic material encasing the plurality of conducting regions, wherein when currents are applied to the conducting regions, current paths in each of the conducting regions cause the currents to generally flow in the same direction to enhance mutual inductance.
2. The magnetic thin film inductor of claim 1, wherein the magnetic material further has cutout sections to reduce eddy currents.
3. The magnetic thin film inductor of claim 1, further comprising:
an insulating layer for each conducting region, the insulating layer is positioned between an associated conducting region and the magnetic material.
4. The magnetic thin film inductor of claim 1, wherein the magnetic material is made from layers of different magnetic material.
5. The magnetic thin film inductor of claim 1, wherein the magnetic material is made from the group consisting of, FeAlO, FeBN, FeBO, FeBC, FeCoBF, FeSiO, FeHfO, FeCoSiBO, FeSmO, FeAlBO, FeSmBO, FeCoSmO, FeZrO, FeNdO, FeYO, FeMgO, CoFeHfO, CoFeSiN, CoAlO, CoAlPdO, CoFeAlO, CoYO and CoFeBSiO.
6. The magnetic thin film inductor of claim 5, wherein the thickness of the magnetic material is in a range of about 0.1 to 1.5 micrometers.

7. A magnetic film inductor comprising:
 - two or more conductive member positioned parallel to each other;
 - magnetic material encasing the two or more conductive members along at least one relatively straight path of the two or more conductive members, wherein current flowing through the two or more conductive members in the same direction enhance mutual inductance of the magnetic film inductor.
8. The magnetic film of claim 7, wherein the magnetic material along at least one relatively straight path has at least one cutout section to prevent eddy currents.
9. The magnetic film of claim 7, further comprising:
 - an insulating layer formed between each conducting member and the magnetic material.
10. The magnetic film of claim 7, wherein the magnetic material is made from the group consisting of, FeAlO, FeBN, FeBO, FeBC, FeCoBF, FeSiO, FeHfO, FeCoSiBO, FeSmO, FeAlBO, FeSmBO, FeCoSmO, FeZrO, FeNdO, FeYO, FeMgO, CoFeHfO, CoFeSiN, CoAlO, CoAlPdO, CoFeAlO, CoYO and CoFeBSiO.
11. The magnetic thin film inductor of claim 10, wherein the thickness of the magnetic material is in a range of about 0.1 to 1.5 micrometers.